COLUMBIA RIVER REGIONAL FORUM

TECHNICAL MANAGEMENT TEAM

October 30th, 2001

FACILITATOR'S NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.

Update, Idaho Power Company:

Raquel Mills reported that Idaho Power is currently releasing 9000 cfs out of Hell's Canyon, while monitoring inflow, targeting 2072' by December 3rd at Brownlee. Idaho Power continues to track redds in the Snake River and will continue to inform TMT of its operations.

SOR 2001-10:

Ron Boyce, on behalf of the State of Oregon and the U.S. Fish and Wildlife Service, summarized their request to increase tailwater elevations at Bonneville Dam to a minimum of 12' beginning November 5th for chum operations. He said that it appears the chum will begin spawning this week and next, and if operations are delayed until November 19th as suggested by the Action Agencies, up to 60% of fish could be lost.

Ron also noted that, under specified conditions, dewatering redds could be an alternative.

In a memo to NMFS and presented at TMT, the Action Agencies outlined certain contingencies they are keeping in mind when considering chum operations. Vernita Bar, power reliability, dewatering, upriver spring chinook and steelhead stocks were listed as factors to be considered. They do not support drafting Grand Coulee before an 85% confidence rate of refill has been met. Rather than raise the issue to IT, Paul Wagner suggested the group continue to closely monitor the situation and check in every week to avoid missed opportunities. Monitoring would include weekly forecasts, inflow levels, population status, Vernita Bar and storage in the Snake River. One suggestion for framing the issue was: under what conditions can this request be implemented without violating the Biological Opinion, Vernita Bar, and System Reliability?

Action: The AA's will put together information to help determine these conditions. A meeting will be held next Wednesday November 7th to discuss the findings.

Action: As requested, Robyn McKay will provide extended information regarding 60 kcfs at Vernita Bar to Ron Boyce.

Action: Oregon and U.S. Fish and Wildlife Service will provide information on what specific conditions dewatering redds would be considered.

Fish Passage Center: Operation Analysis and Effects on Fish:

Margaret Filardo gave a presentation, which summarized the FPC's findings. A question regarding chum came out of the discussion: which is more harmful, beginning flow too late or ending too early? There is no clear answer to this question as yet, but the challenge of striking the necessary balance became evident to all.

Lower Granite Survival Study:
Billy Connor reported with a handout on fall chinook in the Snake River. In summary, he said, fish released sooner saw a higher survival rate than those released later. His handout will be available on the TMT web site.

Mixers at McNary:
Larry Beck reported that two mixers located at the south end of the powerhouse were analyzed for their affects on temperatures. He concluded that more research is necessary to determine effects; research will continue in 2002.

Vernita Bar:
Shane Scott distributed two papers on Vernita Bar Operations from 2001 by Chris Murray, Kenneth Tiffan and Matthew Mesa. These papers described water temperature effects on juvenile fall chinook salmon in the Snake and Columbia Rivers, and will be posted on TMT's web site.

Comparison Analysis, 2001 Vs. Other Years:
Paul Wagner gave a presentation that focused on the record number of adult returns. It was noted that this may well have been due to compliance with the BiOp. and good ocean conditions. A question was raised: was this return enough to bring numbers back up in the coming years? Again, only time will tell.

Current System Conditions:
Cathy Hlebechuk noted that at Bonneville, a flow detector operation has required a small spill operation to move to a different bay. Although BPA voiced an objection, FPALM agreed and will move forward with the operation.

Emergency Protocols:
The group is still awaiting final discussion of the protocols. Oregon's attorney will be contacted for input on the final draft. An update will be given next week.

Lower Granite Balloon Tag Test:
As discussed last week, this operation should not require breaking the MOP+1 range, but FPAC was asked to discuss a contingency plan. If necessary, an emergency TMT call will be organized.

Next Meeting, November 7th, 9-12:
Agenda items:

- Chum operations, continued discussion of SOR
- Water Year 2001 – Harold Opitz
- Emergency Protocols – Oregon

- Lower Granite Balloon Tag Test
- Summarize "Lessons Learned" – Group discussion

TECHNICAL MANAGEMENT TEAM
MEETING NOTES
October 30, 2001
CORPS OF ENGINEERS NORTHWESTERN DIVISION OFFICES – CUSTOM HOUSE
PORTLAND, OREGON

TMT Internet Homepage: http://www.nwd-wc.usace.army.mil/TMT/index.html

DRAFT

1. Greeting and Introductions

The October 30 Technical Management Team meeting, held at the Customs House in Portland, Oregon, was chaired by Cathy Hlebechuk of the Corps and facilitated by Donna Silverberg. The following is a distillation, not a verbatim transcript, of items discussed at the meeting and actions taken. Anyone with questions or comments about these minutes should call Cindy Henriksen at 503/808-3945.

Silverberg welcomed everyone to the meeting, then led a round of introductions and a review of the agenda.

2. Current System Conditions.

Raquel Mills of Idaho Power Corporation reported that Hells Canyon outflow was increased from 8.5 Kcfs to 9 Kcfs yesterday; she said this should be the Hells Canyon discharge for the foreseeable future, barring any major precipitation events in which outflows would be increased. The current Brownlee elevation is 2058.5 feet; the plan is to fill the project to elevation 2072 by December 3.

Field crews completed their fourth redd-counting flyover yesterday, Mills continued; they found 70 new fall chinook redds on the Snake, most above the confluence with the Salmon, bringing the total redds counted to date up to 83. That compares to 103 redds counted in the Snake system last year, Mills noted. Field crews have also found four fall chinook redds in the Imnaha system and 30 in the Grande Ronde. Visibility was poor, Mills added, and the researchers feel there are probably more redds out there than have been counted.

With that, it was agreed to move on to today's SOR discussion. On October 29, the Corps received SOR 2001-10. This SOR, supported by the Fish and Wildlife Service and ODFW, requests the following specific operations:

- Beginning November 5 and continuing until further notice, provide a minimum instantaneous tailrace elevation of 12 feet at Bonneville Dam under conditions where FCRPS operation is consistent with conditions of the Vernita Bar Agreement and NMFS' 2000 FCRPS Biological Opinion RPA.

Ron Boyce spent a few minutes going through the details of this SOR and its justification, noting that the intent of the SOR is to provide stable spawning flows for chum and chinook salmon in the Lower Columbia. The full text of SOR 2001-10 is available via the TMT's Internet homepage; please refer to this document for details.

How many chum spawners do we expect to see this year? Scott Bettin asked. I have heard is estimates in the range of 500-600 chum to the Ives/Pierce Island area, plus 100-200 spawners each to Hamilton Springs and Hardy Creek, Boyce replied. How many have arrived to date? Bettin asked. Very few redds have been counted to date, Boyce replied; the run has not arrived yet. Based on historical information, however, we expect spawning to begin in earnest this week, he added. In 1997, your historic information shows that 5,000 chum were actively spawning below Bonneville by October 15, Bettin observed – either this year's fish are extremely late, or they're not coming at all.

Boyce said the salmon managers are aware that reservoir storage is still very low. I want to be clear, he said, that if all other options have been exhausted, the salmon managers would be willing to consider dewatering the chum redds if the requested tailwater elevation can no longer be sustained without, for example, creating a conflict between the needs of listed and non-listed species. We're not interested in trading off one stock for another, Boyce said – we want to make this operation work for all species.

So you would consider drafting Dworshak, for example, in order to maintain the chum flows? Robyn MacKay asked. That is one option we could discuss, Boyce replied. Any draft of the storage projects at this point in the season would have other consequences and tradeoffs, MacKay said – we would need to have a serious discussion about how the operation requested in the SOR could affect our ability to implement other BiOp operations later this spring.

Paul Wagner then distributed a memo, dated October 30, from the action agencies to NMFS on the subject of "Initiation of Chum Spawning." He spent a few minutes going through this document, which focuses on two main issues:

- The potential impacts of the chum operation on Vernita Bar protection flows
- The sustainability of the chum flows without detrimental impacts to reservoir storage targets

Essentially, said Wagner, I don't hear anyone disagreeing with the fact that we need to provide some level of chum protection flows this fall and winter; the question is mainly when the chum flows should begin this year. In response to a question, Boyce that, according to his analysis, said maintaining a 12-foot tailwater depth at Bonneville would require an average flow of about 130 Kcfs at that project.

The action agencies recognize that the desired start date is November 1, said MacKay; however, there are other factors we need to consider, under the BiOp: reservoir elevations for spring migrants and Vernita Bar flow maintenance, for example. We went through this section of the BiOp to see how often we've been able to achieve a 125 Kcfs chum flow in the November-February period in years following a drought year, MacKay said; generally, it has not been possible to start chum flows of 125 Kcfs on November 1 and maintain them at that level through spring, except in the few years, such as 1978, when fall precipitation is exceptionally highs.

Natural streamflow at The Dalles during the fall is usually about 90 Kcfs, MacKay continued; this fall, the River Forecast Center is estimating natural flows of only 56 Kcfs at The Dalles. There is a possibility that we could increase flows out of the Snake this fall, or out of Grand Coulee, MacKay said; however, both operations have tradeoffs. In particular, she said, we would prefer not to exceed the target protection flow of 55 Kcfs through Vernita Bar, which is problematic if the additional water is to come out of Grand Coulee, MacKay said.

We are coming out of a record low year, MacKay said; basically, the only water we have to augment lower river flows for chum is water that is already in storage, unless a massive rain event occurs, which is certainly possible. The group devoted a few minutes of discussion to the action agencies' model analysis of the likelihood of being able to meet the requested chum and Vernita Bar chinook flows, given current storage levels; MacKay described the assumptions used in each of these model runs.

The action agencies' memo offers the following recommendations:

- The provision of flow for the spawning of chum below Bonneville will begin following the last scheduled Vernita Bar redd count (currently scheduled for November 18), if providing these flows would drive the Vernita Bar protection flow above this year's planned 55 Kcfs target flow. Conversely, chum spawning flows may begin sooner if they can be provided without driving up the Vernita Bar protection level. The scenarios that would provide for an earlier provision of chum spawning flows include a substantial increase in Lower Columbia River tributary inflow or Snake River flow.
- The Bonneville flow will be regulated to a tailwater elevation rather than a steady flow. The tailwater gauge reflects the influence of tides, the Willamette River flow and the effect of local tributary flow on the elevations at which redds are established in the mainstem Columbia. The initial tailwater elevation target may be 11.2 feet, but may change based on results of field operations and available water.
- In evaluating the chum operation, the action agencies will also consider the sufficiency of flows in the Hamilton and Hardy Creeks and side channels to enable access of the creeks

for spawning, the presence of chum in the mainstem, and any change (increase or decrease) in natural flows.

MacKay and Hlebechuk went briefly through the series of model runs developed by the action agencies in support of their analysis. The bottom line, said MacKay, is that in order to achieve 125 Kcfs at Bonneville on November 1 we would need to draft Grand Coulee about a foot per day, an operation that is essentially going to force us into a dewatering decision once refill begins in January. Base flows continue to be critically low; if we're going to bump them upward, that additional water – up to 40 Kcfs -- is going to have to come from storage.

So what can we do to protect chum spawners below Bonneville, given these facts? Boyce asked. We could start the protection flows before November 19, if we get a very significant rain event, Bettin replied -- otherwise, we will start on November 19. Boyce said that, in his opinion, that will be too late to provide any biological benefit to the chum spawners; David Wills said that, based on historical spawning data, the chum spawning could be 60%-70% complete by that date.

The group debated the relative merits of SOR 2001-10 vs. the operations recommended in the action agencies; October 30 memo. Boyce noted that it would be physically possible to get the required flow augmentation volume from the Canadian projects through Grand Coulee while still respecting the 55 Kcfs constraint at Vernita Bar if spill was allowed at Priest Rapids Dam. That's true, but we don't believe we would be in compliance with the BiOp if we do that, MacKay replied.

MacKay observed that ODFW and USFWS are asking the action agencies to violate the Biological Opinion as they read it. According to our analysis, MacKay said, we would have to stop the chum operation after less than 20 days in order to achieve an 85% refill confidence at Grand Coulee.

Wagner said one potential approach to this issue would be for the TMT to meet weekly over the next few weeks to discuss the status of the 2001 chum spawning, inflow levels, snow pack levels, weather forecasts, Vernita Bar operations, Snake River storage and water supply, and any updated analytical results.

In response to a question from David Wills, Bettin said the reason BPA does not want to exceed the 55 Kcfs Vernita Bar protection flow is the fact that, if flows are increased above 55 Kcfs, redds could be established at elevations BPA cannot guarantee will be protected. We are comfortable saying that we can maintain 55 Kcfs through Vernita Bar for the duration of the incubation period, Bettin said; we are not comfortable saying we can maintain 65 Kcfs or 70 Kcfs for the duration.

Would it be possible for BPA to give the TMT an analysis of the magnitude by which the operation requested in the SOR would violate the BiOp criteria? Boyce asked. Shane Scott said Washington is not willing to jeopardize the 2002 spill program in order to provide water for chum spawning this fall and winter. Obviously, Scott said, this is not a black and white situation;

it's a balancing act between the needs of all of the species of concern. Even if these flows aren't provided starting November 5, said Scott, Hamilton and Hardy Creeks are flowing, and the chum are going to find their way up to that spawning habitat. Right now, given current weather and flow forecasts, Washington's position is that we need to store as much water as possible, Scott said.

Ultimately, Boyce said Oregon would like to elevate this issue to the Implementation Team, for discussion at the IT's November 1 meeting. Essentially, he said, I don't understand why there is a risk; we will be evaluating the future risk to water supply through our regular discussions. It is physically possible to route the water down from Canada through Grand Coulee and Vernita Bar, Boyce said; it is simply a question of money, and our ability to provide reimbursement for spill at Priest Rapids. If Oregon is willing to provide those funds, we might be able to discuss that option, Bettin replied – given the fact that Oregon is basically the only entity supporting the SOR, BPA is not willing to fund that spill.

After a break, Boyce said better information is needed about the conditions under which the SOR could be implemented, without detrimental impacts to system reliability and refill or to Vernita Bar and BiOp operations. We're operating in a vacuum here, he said – the action agencies need to give us a better understanding of when the requested operation can be implemented. We need quick resolution on this issue, he said; given the fact that we would like the operation to begin on November 5, we can either attempt to resolve this at Thursday's IT meeting, or convene a special TMT meeting one week from now.

It may not be possible to provide the information you're after, Cindy Henriksen replied – there are so many variables that it would take weeks of analysis to exhaust them all. What makes more sense, to me, is to plan on weekly discussion of the factors Paul Wagner suggested earlier, she said. But what will be the trigger? Boyce asked – how will you make the decision as to when the chum operation begins? We'll evaluate natural flow, reservoir elevations, weather etc., and when it is possible to implement the chum flow without exceeding the Vernita Bar protection flow, we will do so, Henriksen replied. I can't give you an iron-clad set of criteria which, when met, will trigger the chum operation, she said – we won't know all of those factors until we get there.

Ultimately, Boyce reiterated his request that the action agencies put together a package of information about how the chum flow decision will be made for discussion at a TMT meeting next Wednesday, November 7. We can bring any updated information we have to a meeting next week, Bettin replied. Hlebechuk asked Boyce to bring information to the next meeting regarding criteria which Oregon and USFWS would consider dewatering rredds. .It sounds like we have a plan, said Silverberg – we will meet next Wednesday to determine how we'll make the decision about when to implement this SOR.

Moving on to current system conditions, Hlebechuk reported that Libby continues to release 6 Kcfs; project elevation was 2426 feet as of midnight last night. The December 31 Upper Rule Curve target is 2411 feet at Libby; the project has drafted about a foot over the past week. Albeni Falls is currently releasing 17 Kcfs. The current Dworshak elevation is 1516.3 feet;

the project filled about 7/10 of a foot over the past week, but will likely not achieve the 1558-foot December 31 Upper Rule Curve elevation at that project. Last week's average flow was about 17 Kcfs at Lower Granite and 93 Kcfs at Bonneville, Hlebechuk added.

Tony Norris reported that Grand Coulee is releasing 86 Kcfs; he added that Hungry Horse elevation is currently 3528 and falling. The project is being operated to maintain the 3.26 Kcfs Columbia Falls minimum

On the power front, life is good, said Bettin. With respect to fish migration, Wagner reiterated that few or no chum spawners have yet been observed at Ives/Pierce Island.

3. Finalization of TMT Emergency Protocols.

Boyce said the revised protocols are still being reviewed by Oregon legal staff; beyond that, he said, I have nothing to report. I would like to try to finalize the protocols at the next TMT meeting, if possible, Hlebechuk said. I will find out what I can, Boyce said. Wagner said NMFS is OK with the revised protocols; Scott said Washington is also willing to approve them.

4. Lower Granite Balloon Tag Test.

Hlebechuk noted that there appears to be enough water to run the Lower Granite removable spillway weir (RSW) balloon tag test beginning November 5; if a problem does occur, would the salmon managers prefer to go to zero flow, or operate outside 1% peak efficiency? she asked. We don't anticipate a problem, she stressed, but if a problem does appear, we should have a contingency plan in place. Wagner said FPAC did not discuss the test at its meeting this week. In that case, given the fact that we are unlikely to need the contingency operation, we'll just move ahead with the test and will communicate with the TMT if any problems arise, said Bettin.

5. 2002 Chum Studies/Chum Operations.

This topic was covered during a previous agenda item.

6. Year-End Review.

A. WY2001 Water Supply Forecast. In the absence of Harold Opitz, this agenda item was postponed.

B. Vernita Bar Operations. Shane Scott led this presentation, distributing a pair of reports summarizing the effects of 2001 Mid-Columbia operations on Hanford Reach chinook stranding and mortality. Scott explained the methodology underlying WDFW's ongoing stranding survival study, then noted that, according to WDFW's estimates, more than 1.6 million Hanford reach juvenile chinook died in stranding events in 2001, as much as 14% of the total run. This compares to stranding mortalities of only about 72,000 fish in 2000. Bettin noted that

the Mid-Columbia Coordinating Committee will be meeting in November to determine the Hanford Reach stranding protection operation for 2002.

C. Mixers at McNary. Larry Beck provided this report, noting that two mixers were installed at the south end of the powerhouse this summer. Both were directed at a 45-degree angle at an earthen bank. Temperatures were measured at two sets of buoys, one along the boating restricted zone, the other closer to the mixers. Temperatures were also measured in the gatewell. They used the average temperature from each of the buoys to develop a multiple regression analysis, Beck explained.

The regression was able to explain 45-53% of the variation in temperature between forebay and gatewell, Beck explained; they operated the mixers on a 6-hour-on, 6-hour-off basis. When the mixers were on, they saw a 0.2 degree F difference between forebay and gatewell temperatures. Basically, the researchers couldn't tell whether the mixers influenced temperatures inside the gatewell; by the same token, they could not say for sure that mixer operation did not influence gatewell temperature.

Beck said that, in 2002, the Corps plans to operate McNary Units 1-3 during the mixer test, something they did not do in 2001. The bottom line, said Bettin, is that the mixer concept shows some promise; however, mainly because it was such a unique water year, further testing is needed to validate the concept.

D. Lower Granite Study. David Wills distributed copies of the year-end summary of passage forecasting and observed survival for wild fall chinook in the Snake River. Billy Connor spent a few minutes going through this document, touching on how well Connor's 2001 run forecast tallied with actual survival through the system.

Overall, said Connor, the performance of the 2001 forecast was relatively poor; however, the models were not developed to accurately predict run timing under the environmental conditions observed in 2000 and 2001. He noted that refitting the forecast models using the 2000 and 2001 data would improve model performance. In general, Connor's predictions of various points of passage lagged 10-18 days behind the actual run timing.

Connor noted that survival to the tailrace of Lower Granite Dam in 2001 was the lowest since he began estimating survival for fall chinook; survival of fish from Cohort 1 (the first fall chinook past Lower Granite) was estimated to be just over 39%, compared to a 1998-2001 average of 63.7%; the survival of fish from Cohort 4 (the last fall chinook juveniles past Lower Granite) was only 3.2% in 2001, compared to a 1998-2001 average of 27.7%.

Is it fair to say that passage timing was earlier than expected, and survival was higher earlier in the run? Wagner asked. It would be more accurate to say that the 2001 run was truncated, Connor replied – the later migrants were basically cut off.

Were you able to separate out the relative influence of flow and temperature in 2001, as you did in 2000? Wagner asked. No, but that would be an interesting question to ask this data set, Connor replied. One thing's for sure – if we would have had a hot summer, with

correspondingly warmer water temperatures, survival would have been even worse than we actually saw.

E. Comparison Analysis of 2001/Other Years. Wagner began this portion of the agenda by putting up an overhead showing adult fall chinook returns to Bonneville Dam for the years 1964-2001 – 400,000 in 2001, the highest count since the completion of Bonneville Dam in 1938. He put up the same data set for summer chinook; while the 2001 count of just under 80,000 was the highest in many years, there were some higher totals recorded in the late 1950s and early 1960s. For spring chinook, said Wagner, as you're all aware, 2001 was also a record adult return year. On the steelhead front, more than 600,000 wild and hatchery adults returned in 2001, almost double the next-highest total since 1960.

Boyce offered one clarification: that in the early days of the FCRPS, there was still a commercial fishery which harvested millions of pounds of returning chinook and steelhead. It may be somewhat misleading, in other words, to say that the 2001 adult return was the highest since Bonneville Dam was completed, Boyce said, because we don't know how many adults were harvested before they could reach the spawning grounds in the 1930s and '40s. Excellent point, said Wagner. The real question is whether the 2001 adult returns will be enough to meet the survival objectives, Margaret Filardo observed.

F. Fish Passage Center Operation Analysis. Margaret Filardo led this presentation, a preliminary analysis of the 2001 juvenile salmon migration.

Filardo touched on the physical characteristics of the 2001 migration season, spring and summer flow and spill at Lower Granite and McNary Dams, historic (1995-2001) spring and summer flows in the Snake and Lower Columbia Rivers, spill and water temperature information for various sites in the basin, migration characteristics, 2001 passage indices vs. flow at various dams, spring and summer migration timing data, chinook and steelhead travel time information, spill timing data, the estimated effects of the 2001 spill program on survival, 2001 juvenile survival estimates for the Snake, Mid- and Lower Columbia Rivers, historic (1995-2001) survival estimates (very poor in 2001 compared to the previous five years, particularly for steelhead), Priest Rapids flow and stranding information, and chum redd data for the Ives/Pierce Island area.

Filardo finished her presentation with the following summary:

- Near-record low runoff volume, energy regulation, volatile wholesale power markets and BPA energy and financial emergencies combined to produce poor migration conditions in 2001.
- Biological Opinion flow targets were never met.
- Spill was eliminated from Snake projects and implemented too late in the spring and summer migration in the Lower Columbia.
- Most Snake River migrants were transported.
- Run timing was affected with the runs beginning later and with a shorter duration of passage
- Power peaking in the Mid-Columbia likely exacerbated the effects of the low flow year.
- Travel times in 2001 were some of the slowest observed in the historic record.
- River management in the fall of 2000 limited access to chum spawning areas and the cessation of protection flows occurred too early during emergence in the spring. Chum likely suffered losses.
- River conditions produced the poorest survival estimates since survival has been estimated using PIT tags.

G. Other. At Henriksen's suggestion, it was agreed that the agenda for next Wednesday's meeting will include a discussion of the lessons learned in 2001.

7. Next TMT Meeting Date.

The next meeting of the Technical Management Team was set for Wednesday, November 7 from 9 a.m. to noon. Meeting notes prepared by Jeff Kuechle, BPA contractor.

TMT PARTICIPANT LIST

OCTOBER 30, 2001

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